UNIFORMED SERVICES UNIVERSITY OF THE HEALTH SCIENCES

RADIOLOGY 4100
COURSE SYLLABUS

COURSE DIRECTOR:

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COURSE DESCRIPTION:

The fourth year elective in radiology is designed to be an integrated curriculum of didactic lectures, classroom activities and clinical experiences. The Department of Radiology and Radiological Sciences is dedicated to excellence in medical education and to ensuring a diversified exposure to diagnostic imaging and the radiological sciences. The presentations and discussions will be principally directed toward what primary care clinicians need to know in order to effectively and efficiently request imaging studies and procedures, and understand the results. This course hopes to acquaint the medical student with the medical and psycho-social reactions that patients may experience during and after imaging procedures and examinations required to diagnose and treat.

The clinical period during the basic radiology elective is an opportunity for students to observe the performance of imaging procedures and to review multiple radiographic studies (plain films, ultrasound, CT, MRI, nuclear medicine, interventional, and angiographic) with a radiologist. In addition, students will gain an understanding as to how radiology is practiced and how radiologists interact with clinicians. Students will develop an approach to reading films, will review the appropriateness of each study ordered based upon the presenting history, and will become familiar with cost issues in radiology. Students will also develop an appreciation for the experiences of patients undergoing the commonly ordered medical imaging studies (plain film, CT, MRI, bone scan, US).

COURSE GOALS/OBJECTIVES:

By the end of the Radiology 4100 elective, medical students should be able to:

Goal 1.
Understand how to effectively utilize the imaging and procedure services available in a radiology department.
Objectives:

A. Discuss the indications for various exams in the areas of plain film X-ray, Fluoroscopy, Ultrasound, CT, MR, Nuclear Medicine, Angiography and Interventional procedures.
B. List several examples of when a patient may need to be pre-medicated for an exam.
C. Discuss the role of radiology exams for common clinical concerns.
D. Demonstrate the ability to use the medical literature, and modify radiology ordering practices appropriately based upon the information obtained from the literature.

Goal 2.
Understand the cardiothoracic anatomy as shown on plain chest radiography. (Refresher from MS II course).
Objectives:

A. Describe the fundamental or systematic approach for interpretation of a chest radiograph.
B. List the major anatomic structures seen on a posterioanterior chest radiographs.
C. Describe the different X-ray techniques for evaluation of the thorax (e.g. inspiration/expiration views, decubitus views, etc) and the rationale for each technique.

Goal 3.
Understand the basic anatomy and pathology on general images of the chest, abdomen, head and extremities.
Objectives:

A. List several examples of how to differentiate normal variants from abnormal plain radiographs, including changes associated with normal physical development.
B. Demonstrate basic knowledge about the ability of plain radiographs to identify different structures.
C. Identify normal anatomy on general images of the chest, abdomen, head and extremities.

Goal 4.
Understand the basic principles in producing images in Radiography, Sonography, Computed Tomography, Nuclear Medicine and Magnetic Resonance.
Objectives:

A. Describe the basic physics of radiologic imaging.

B. Differentiate the basic mechanisms of image formation among the different modalities.
C. Discuss patient safety issues for the different modalities (e.g. radiation exposure) including the use of contrast agents

Goal 5.
Integrate clinical history, imaging findings and pathology.
Objectives:

A. Prepare a teaching file case of an interesting clinical or anatomic feature. The case must have a definitive diagnosis, relevant history and pathologic confirmation, if applicable.
B. Provide an oral presentation of a case study at the end of the elective.

Goal 6.
Become familiar with a variety of the career opportunities in radiology and diagnostic imaging.
Objectives:

A. Describe the role of the radiologist as a consultant and advisor to other physicians and other medical personnel.
B. List the various roles for radiologists in clinical decision-making.

STUDENT REQUIREMENTS FOR THIS COURSE:

1. Students are expected to attend, on time, all didactic sessions. Students must attend "clinical days" as assigned during the elective and are expected to participate in the hospital activities. A Procedure and Activity Form will be required to be completed and serve as a guide for suggested activities during the clinical experience.

2. Each student will be required to prepare and present one teaching file case by the end of the elective. Instructions are included on the Radiology Department website http://rad.usuhs.mil/rad/handouts/ms-4.html

3. Students are also expected to complete all quizzes during the elective. If you are going to miss a quiz, arrangements must be made prior to the absence to make up the quiz.

4. Students are expected to complete a course evaluation, which is available on the radiology website at http://rad.usuhs.mil/rad/handouts/ms-4.html

5. Students are expected to document their activities during the clinical experience by completing the Radiology Procedures and Activities form, and submitting it at the time of the case presentations.

OPTIONAL COURSE ACTIVITIES:

1. Students may arrange to observe procedures in addition to those listed as required on the Procedures Observation Form. Arrangements should be made through the Clinical Coordinator at the hospital to which you are assigned. The Clinical Coordinator has the discretion to assign you to other staff members, fellows or residents, depending upon your specific interests and the availability of access to the procedures.

2. Students may attend Radiology and interdepartmental conferences. Students are welcome to attend all conferences that involve Radiology and Nuclear Medicine at all venues throughout this block. There are also numerous subspecialty conferences and conferences with referring clinicians that may be beneficial. Details can be obtained from any of our residents, fellows, faculty or clinical coordinators at each clinical site.

3. Students may also join residents during emergency duty on evenings and weekends, a valuable experience for those students interested in emergency or trauma medicine.

SELF STUDY ACTIVITIES:

1. American College of Radiology (ACR) Teaching File. Reviewing teaching files is a key method for self-study during the radiology elective. Films can be reviewed alone, or on small groups. Some portions of the ACR collection are available online through MedPix, at http://rad.usuhs.mil/medpix/medpix.html#top . CD version of the ACR files are available at the library reference desk (chest, pediatrics, and musculoskeletal).

2. USUHS teaching file. All images are available through MedPix at http://rad.usuhs.mil/medpix/medpix.html?mode=cow_sorter#top

3. Other materials are available at the USUHS Department of Radiology and Radiological Sciences, and each of the clinical facilities. Please ask any staff or faculty member for assistance in obtaining or using these materials.

METHOD OF EVALUATION AND GRADING:

Grading for the Radiology 4100 elective is pass/fail. The grading is in accordance with the Academic Policy of the F. Edward Hébert School of Medicine, USUHS-I 1105 Policy and is reviewed periodically by the School of Medicine Curriculum Committee. Students are required to attend their clinical assignments during the elective. Failure to complete course work and/or participate in clinical days may result in course failure.

RECOMMENDED READING:

1. *Squire's Fundamentals Of Radiology*, 5th Edition. Robert A. Novelline, MD. Harvard University Press, 1997.

2. *Radiology and Imaging for Medical Students.* David Sutton, 7th Edition, Churchill Livingstone, Inc., 1998.

3. *Living Anatomy: A Working Atlas Using Computed Tomography, Magnetic Resonance, and Angiography Images.* Robert A. Novelline, Philadelphia: Hanley & Belfus; St. Louis: Mosby, 1987.

4. *Felson's Principles Of Chest Roentgenology: A Programmed Text.* Lawrence R. Goodman, W.B. Saunders, 1999.

5. *Exercises in Diagnostic Radiology: Chest, Abdomen, Bone, and Clinical Skills: A Problem-Based Text.* Judith Amorosa, W.B. Saunders, 1993.

6. *Grainger And Allison's Diagnostic Radiology: A Textbook Of Medical Imaging*, 3rd Edition. Ronald G. Grainger. Churchill Livingstone, 1997.

7. *Exercises in Diagnostic Radiology.* Lucy Frank Squire, MD, W.B. Saunders Company, Philadelphia 1) The Chest, 2) Bone, 3) The Abdomen, 4) The Total Patient, and 7) The Emergency Patient (Volumes 1-4, combined 2nd Edition).

8. *Clinical Radiology: The Essentials.* Richard H. Daffner, (Ed). Williams & Wilkins, 1999.

9. *Radiology 101: The Basics and Fundamentals of Imaging*. William E. Erkonen, and Wilbur L. Smith. Lippincott.-Raven, 1998.

10. *Diagnosis of Disease of the Chest.* Robert G. Fraser, MD, J.A. Peter Pare, MD, Richard S. Fraser, MD, and George P. Genereux, MD. W.B. Saunders Company, 1988.

11. *Radiology and Imaging for Medical Students*, 5th Edition. David Sutton, MD. Churchill Livingstone Inc, 1988.

12. *Clinical Imaging: An introduction to the Role of Imaging in clinical Practice.* Matthew Freedman, (Ed). Churchill Livingstone Inc., 1988.

13. *A Textbook of Radiology and Medical Imaging,* 4th Edition. David Sutton, MD, (Ed). Churchill Livingstone Inc., 1987.